

WHAT IS CLAIMED IS:

- 1                   1.       A method of forming a polyurethane skin for an interior part  
2 of a vehicle, comprising:  
3                   providing an air assisted spray nozzle capable of delivering an  
4 atomizing air stream;  
5                   heating an in-mold coating composition to a temperature above  
6 ambient temperature to create a heated in-mold coating composition;  
7                   spraying the heated in-mold coating composition towards a forming  
8 surface with the air assisted spray nozzle to create an in-mold coating layer; and  
9                   applying a layer of polyurethane over the in-mold coating layer to  
10 form the polyurethane skin.
- 1                   2.       The method of claim 1 wherein the step of heating the in-mold  
2 coating composition is performed by heating the atomizing air before the atomizing  
3 air is provided to the spray nozzle.
- 1                   3.       The method of claim 2 wherein the atomizing air stream is  
2 heated to a temperature of between 100°F and 200°F.
- 1                   4.       The method of claim 2 wherein the atomizing air stream is  
2 heated to a temperature of between 120°F and 160°F.
- 1                   5.       The method of claim 1 wherein the step of applying the layer  
2 of polyurethane is performed by spraying a layer of aromatic polyurethane over the  
3 in-mold coating layer after a flash cycle.
- 1                   6.       The method of claim 5 wherein the step of heating the in-mold  
2 coating composition is performed on the in-mold coating composition prior to entry  
3 of the in-mold coating composition into the spray nozzle, and wherein the in-mold  
4 coating is heated to a temperature of between 100°F and 180°F.

1                   7.       A system for manufacturing a polyurethane skin for an interior  
2 part of a vehicle, comprising:  
3                   an air compressor for providing a compressed air to an air assisted  
4 spray nozzle having an atomizing air stream;  
5                   an air heater for heating the compressed air to a temperature above  
6 ambient temperature to provide heated atomizing air;  
7                   an air assisted spray nozzle using the heated atomizing air for  
8 spraying an in-mold coating composition layer toward a forming surface of a die;  
9 and  
10                  a spray applicator for applying a layer of polyurethane over the in-  
11 mold coating layer to form the polyurethane skin.

1                   8.       The system of claim 7 wherein the air heater heats the  
2 atomizing air stream to a temperature of between 100°F and 200°F.

1                   9.       The system of claim 7 wherein the air heater heats the  
2 atomizing air stream to a temperature of between 120°F and 160°F.

1                   10.      The system of claim 7 wherein the air heater heats the  
2 atomizing air to evaporate a solvent of the in-mold coating.

1                   11.      The system of claim 7 wherein the spray applicator for  
2 applying a layer of polyurethane over the in-mold coating layer applies an aromatic  
3 polyurethane after a flash cycle.

1                   12.      The system of claim 11 wherein the flash cycle is 20% shorter  
2 than a flash cycle for an in-mold coating composition applied without heating the  
3 atomization air.

1                   13.      An in-mold coating composition spray system, comprising:  
2                   a drum containing a supply of in-mold coating composition that is  
3 connected to a fluid circuit;

4                   a pump for pumping the in-mold coating composition from the drum  
5 and through the fluid circuit;  
6                   a spray gun connected to the fluid circuit that receives the in-mold  
7 coating composition from the pump;  
8                   an air compressor for providing compressed air through an air line  
9 to the spray gun to atomize the in-mold coating composition and direct the in-mold  
10 coating composition in a pattern; and  
11                  a heater operative to heat the compressed air in the airline before the  
12 compressed air is provided to the spray gun.

1                   14.    The in-mold coating composition spray system of claim 13  
2 wherein the compressed air is used to atomize the in-mold coating and also to direct  
3 the spray in a fan-shaped spray pattern.

1                   15.    The in-mold coating composition spray system of claim 13  
2 further comprising a color manifold station connected to the fluid circuit wherein the  
3 in-mold coating composition is selected from a group of different color in-mold  
4 coatings.

1                   16.    The in-mold coating composition spray system of claim 13  
2 further comprising an air piloted pressure regulator in the fluid circuit immediately  
3 up stream from the spray gun.